

**APPLICATION FOR
EXTENSION OF EXPERIMENTAL STA**

**Current File No. 1267-EX-ST-2021
Original File No. 0033-EX-ST-2021 (Call Sign WR9XNB)
ATTOBahn, Inc.**

The following information is provided in support of the accompanying application for a 180-day extension of the Experimental Special Temporary Authority (STA) granted to ATTOBahn, Inc. on February 23, 2021, in File No. 0033-EX-ST-2021. The current STA will expire on August 16, 2021. The applicant requests authority to continue testing the networking capabilities of this equipment at frequencies above 95 GHz, and in particular during different seasons of the year.

The technical information in this exhibit is identical in all respects to that which was provided in the initial STA application.

A. Background

The applicant, ATTOBahn, Inc., is planning to test new communications devices and networking technology it is developing for frequencies above 95 GHz. The applicant intends to experiment with frequencies in this range for very high bandwidth, high-speed data delivery and transport using a new network architecture. Although these frequencies (96-105 GHz) are in the bands recently designated as "Spectrum Horizons," the applicant is not requesting a Spectrum Horizons Experimental Radio License. The applicant is only requesting Special Temporary Authority ("STA") for limited equipment testing and demonstration purposes, and does not intend to operate in the 96-105 GHz range on a long-term basis.

B. Purpose of Operation

ATTOBahn seeks to test propagation and networking parameters for transmitting devices operating above 95 GHz. This experimental testing in the 95-105 GHz band will be for propagation testing and proof-of-concept.

C. Frequencies

Experimental STA is requested for two frequency bands: 95-100 GHz and 100-105 GHz. The applicant is proposing two band segments because it was unable to procure commercially-available monolithic microwave integrated circuits ("MMICs") that will allow seamless operation over the 95-105 GHz range. As a result, the applicant is planning to use MMICs from two manufacturers that, used together, will allow operation over the 95-105 GHz band. Each MMIC operates with slightly different technical parameters, as explained below.

The applicant is aware that the 100-102 GHz band is allocated for passive services; namely, EARTH EXPLORATION-SATELLITE (passive), RADIO ASTRONOMY, and SPACE RESEARCH (passive). Pursuant to Section 5.85(a)(2) of the FCC's Rules, the applicant acknowledges that long-term or multiple location use of passive bands is not possible and that it intends to transition any long-term use to a band with appropriate allocations. The applicant has selected the 96-105 GHz band, which includes the 100-102

GHz segment, for these experiments because transmitters at frequencies above 95 GHz are not readily available or are very expensive. Avoiding the 100-102 GHz segment would require custom-made transmitters and would cause significant delay in the applicant's ability to conduct propagation and network testing for its new technology.

The applicant is aware of only two radio astronomy facilities receiving at 100-102 GHz that are within 250 km of the areas where the applicant intends to operate:

- a. The Haystack Observatory, in Westford, MA, approximately 180 km from Pocasset, MA.
- b. The Green Bank telescope, in Green Bank, WV, approximately 225 km from Falls Church, VA.

The applicant is willing to coordinate with the operators of passive facilities in the 100-102 GHz band as the FCC may require to comply with Section 5.85(a)(2).

D. Locations

Operation will be confined to six small geographic areas in Massachusetts, New York, Virginia, and California, with transmitters limited to a 3.2 kilometer radius around a center point in each area. The six areas of operation are as follows:

Location	Radius of Operation	Purpose
Pocasset, MA	3.2 km	Laboratory and field testing
Falls Church, VA	3.2 km	Laboratory, Field testing, and demonstrations
New York, NY Grace Building	3.2 km	Field testing and demonstrations
New York, NY Broadway	3.2 km	Field testing and demonstrations
Brooklyn Navy Yard, NY	3.2 km	Field testing and demonstrations
Placentia, CA	3.2 km	Field testing and demonstrations

The transmitting devices will include mobiles and fixed devices that are deployed within each operating area. Because the applicant does not know the exact location where each fixed device will be deployed, and because the applicant will likely rearrange fixed devices as part of the test program, the application is requesting classification of all devices as "mobile."

E. Directional Antennas and ERP

The applicant intends to test four types of antennas in each of the frequency bands:

Frequency Range (GHz)	Antenna Type	Horiz. Beam Width (deg.)	Vert. Beam Width (deg.)	Gain (dBi)	Effective Radiated Power (ERP)
95 – 100	Horn	30	30	15	2 W
95 – 100	Horn	18	18	25	10 W
95 – 100	Horn Lens / Conical	0.7	0.7	47	1.5 KW
95 – 100	Omni	45	360	0	50 mW
100-105	Horn	30	30	15	125 mW
100-105	Horn	18	18	25	1 W

100-105	Horn Lens / Conical	0.7	0.7	47	200 W
100-105	Omni	45	360	0	3.2 mW

Mobile and fixed devices will be deployed within each geographic area of operation to test networking among devices, and azimuth will vary by device and location. The applicant anticipates that effective communications paths between devices will be up to 0.5 or 1.0 miles, depending on frequency band and type of antennas, or up to 2.0 miles if the path incorporates a repeater comprised of a low noise amplifier and two antennas.

F. Antenna Structures

Devices will be either handheld or will be mounted on existing utility poles or on the sides of buildings in primarily urban environments. The applicant does not intend to build any new antenna structures that would exceed 6 meters above ground or above a building or other manmade structure. Thus, there are no issues related to clearance by the Federal Aviation Administration (FAA).

H. Contact Information and Stop Buzzer

Questions regarding this application should be directed to: Richard Forde, Network Engineer, 571-471-3426, or richard@attobahn.com

The Stop Buzzer contact is: Richard Forde, Network Engineer, 571-471-3426, or richard@attobahn.com

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